Lanner Primary School Mathematics Policy

January 2022

This policy should be read in conjunction with the following school policies:

Calculation Policy

Assessment Policy

Marking and Feedback Policy

Equal opportunities Policy

SEND Policy

Introduction

At Lanner Primary School, we recognise maths as an essential life skill and we are committed to ensuring that all children have a positive and meaningful experience of the subject. We aim to present maths as a challenging, exciting and relevant subject in order to promote a confident attitude.

We have a mastery approach to the teaching and learning of mathematics. The rationale behind this approach to teaching mathematics lies within the research from the Mathematics Specialist Teacher Programme, the NCETM/ Maths Hub as well as the National Curriculum, which states:

The expectation is that most pupils will move through the programmes of study at broadly the same pace.

Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.

Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Intent

Mathematical skills and knowledge should be delivered, explored and revisited through conscious decision- making and awareness of learning and progress needs and abilities. Children should develop resilience and self-confidence in applying their learning skills. The collaboration between peers, and the relationship between learners and their class teacher should drive the learning and inform the content, strategies and real-world contextualisation to maximise on the progress and learning opportunities.

Implementation

A 'mastery' approach has been adapted and implemented at Lanner Primary School for the planning, delivery and engagement with mathematics.

We primarily use the White Rose Maths material to plan mathematical units that are explored progressively, drawing on resources, data and suggestions from reliable sources such as NCETM and nrich.co.uk to link mathematical talk and knowledge across the various units (e.g. multiplication and area).

When planning for objective coverage, teachers are expected to take the following mastery strategies into account:

• Small steps as documented in the White Rose materials.

• Ping- pong style of delivery- bouncing ideas, concepts and theories around the classroom.

• Implementing the Concrete, Pictorial and Abstract (CPA) approach to introducing, exploring and applying mathematical concepts.

• Plan and thoughtfully consider key questions and mathematical vocabulary at the entry points of a lesson/ units.

• Provide multiple opportunities for verbal and written/drawn reasoning (explaining and using mathematical vocabulary to explain methods or reasoning) within unit exploration.

• Inclusion of relevant problem-solving opportunities, where children are expected to draw on and apply multiple concepts to address or approach a challenge.

• Modelling of all skills and approaches.

• Displaying, modelling and sharing of efficient and accurate methods (with parents/ carers whenever possible).

• Opportunities to explore maths concepts/objectives at 'greater depth'.

• Include all learners, providing relevant support for those with additional needs (educational, medical or otherwise).

Units of work will be assessed upon the completion of each one. Teachers may use summative assessments published by WRM and/or add regular data drops on Target Tracker using the statements provided and using it to inform the next step. The end-of-year assessment will be completed in May (Years 2 and 6 SATs) or June (rest of the school) to provide a snapshot of individual annual progress.

Teachers are expected to audit their subject knowledge of Maths; completing personal research (as and when necessary) to ensure their own teaching of concepts is accurate and appropriate for their year group. The Maths co-ordinator will provide training, planning support and 'book look'/ environment feedback to improve staff confidence and expertise, ensuring a consistent approach from EYFS through to Y6 (including Y7 transition).

Mathematical Aims

To ensure that pupils:

- Become **fluent in the fundamentals** of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **Reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- Can **solve problems** by applying their mathematics to a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
- Foster positive attitudes towards mathematics by **developing pupils' confidence, independence, persistence and co-operation skills.**

At Lanner Primary School, we believe that mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are organised into distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge and understanding to science and other subjects, and will be provided with opportunities to do so. The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. 'Live marking' and incisive, verbal feedback will identify those children rapidly within a lesson. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice (post teaching intervention, homework etc.), before moving on.

Teaching Principles

1. Teachers believe the vast majority of children can succeed in learning mathematics in line with national expectations.
2. The whole class are taught mathematics together, with little differentiation by acceleration to new content. We do not group/ set by ability. The learning needs of individuals are addressed through carefully scaffolding, questioning and appropriate rapid intervention where necessary, to provide support and

challenge. Children with SEN are provided learning opportunities to match their needs and ensure progress for those individuals.

3. The reasoning behind mathematical processes are established. Teacher/ pupil interaction explores *how* answers were obtained as well as *why* the method worked and what might be the most efficient strategy. Teachers are beginning to explore the strategies exposed in Number Sense (an invention delivered by our trained TAs) within their daily taught lessons so all the children share a common language.
4. Precise mathematical language is used by teachers so that mathematical ideas are conveyed with clarity and precision. Specific time at the start of each lesson is dedicated to exposing and using new, mathematical vocabulary. We strongly believe this provides equity to all learners, including those with a special educational need.
5. Sufficient time is spent on key concepts to ensure learning is well developed and deeply embedded before moving on. Paired talk is used to consolidate learning: children are often asked to share a method or explain/ reason with a partner.

Features of a lesson

1. Lessons last for approximately one hour x 5 days a week. It begins with a teacher and/or TA input which then allows ample time for independent practice. Independent tasks should include fluency tasks, reasoning, problem solving/ higher- order thinking activities.
2. Lessons are sharply focused with one new objective (WALT) introduced at a time.
3. Difficult concepts and potential misconceptions are identified in advance and strategies to address them are planned (pre teaching where possible/ use of concrete apparatus etc).
4. Feedback should be provided within the lesson and / or during the next maths lesson where necessary, in order to allow children to move on swiftly in their learning.
5. The use of high quality materials are used to support learning (Nrich, NCETM, White Rose materials, I see reasoning).
6. There is regular interchange between concrete/ contextual ideas and their abstract/ symbolic representation.
7. Making comparisons is an important form of developing deep knowledge. The questions, 'What is the same/ different?' are often used to draw attention to essential features of concepts.
8. Teacher- led discussion is interspersed with tasks involving pupil-to-pupil discussion and completion of time-focused activities.
9. An additional arithmetic session is conducted every morning – prior to a maths lessons- in Years 1-6 using 'Fluent in 5' materials from Third Space Learning. EYFS teach arithmetic skills through songs and rhymes outside of their mathematical activities.

Classroom Ethos

1. Everyone can learn mathematics to the highest levels.
2. If you 'can't do it', you 'can't do it yet'.
3. Mistakes are valuable and should be shared/ learnt from (shared on working walls).
4. Questions are important.
5. Mathematics is about creativity and problem solving.
6. Mathematics is about making connections and communicating what we think.
7. Depth is much more important than speed.
8. Maths lessons are about learning, not performing.
9. Working walls should be current, used and show relevant/ appropriate information for each maths unit.

As a result, we may see **less:**

- Daily formal marking with *lots* of written feedback (however, **daily 'live marking' is essentia**l, with feedback given alongside weekly, more formal marking). During Covid 19, teachers are using more verbal feedback and are using mark sheets *at and throughout* the lesson to gauge learning, misconceptions and correct mistakes. Mark sheets can then be used effectively to plan for post-teach opportunities.
- Covering lots of ideas in a week.
- Formal, long interventions to boost them out of class.

- Separating children into ability groups.

Impact

The exploration of mathematics should be interactive and engaging, with content made relevant to children's real-world experiences and contextualised thus to support consolidation and retention of knowledge and skill.

Children should approach mathematical study with confidence and enthusiasm, and view tasks and challenges that call for application of varied knowledge across units of work with resilience and a willingness to collaborate.

Approach and response to reasoning activities should improve term on term, with the expectation that by the end of the year, children are happy to accurately define and use mathematical vocabulary introduced by their teacher, as well as complete stem sentences to complete mathematical statements or reasoning.

Teaching and support staff should also see mastery maths as an opportunity to highlight and further improve concepts that have a clear impact on progress and learning, while also analysing and evaluating practice to ensure it is enhanced and strengthened.

Role of the Subject Leader

1. Ensure teachers understand the requirements of the National Curriculum and support them with lesson planning ideas.
2. Lead by example by setting high standards in their own teaching.
3. Lead and signposts CPD opportunities.
4. Lead the whole school monitoring and evaluation of teaching and learning in mathematics by observing lessons, modelling lessons, analysing data, conducting book scrutiny and engaging in pupil conferencing.
5. Take responsibility for managing own professional development by participating in external training, private study, engagement in educational research and reading.
6. Keep parents informed about mathematical issues.
7. Trained staff and monitor the implementation of 'Number Sense' (a programme used as an intervention currently).
8. Keep the school policy for mathematics under regular review.
9. To work closely with the head / SLT to further develop and monitor the mastery approach to maths.
10. Work with the Cornwall and West Devon Maths Hub to adjust and refine our curriculum for the children at Lanner.

THE NATIONAL CURRICULUM

Knowledge, Skills and Understanding

In KS1 and KS2, teachers use the National Curriculum for Mathematics (2014) as the basis of our mathematics teaching to ensure complete coverage of all aspects of mathematics. To supplement this further, we use our agreed approach stated in our Maths Calculation Policy, which guides our children though the four operations from EYFS to Y6. This immersion in mathematics from EYFS to Y6 ensures that from an early age, children become competent in mathematics, fostering their ability to:

- Secure number facts, such as number bonds, multiplication tables, doubles and halves
- Calculate accurately and efficiently, both mentally and in writing
- Draw on a range of calculation strategies
- Make sense of number problems, including non-routine 'real' problems
- Develop spatial awareness and an understanding of geometry, statistics and measure.

Breadth of Study

At Lanner Primary School, we believe that mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. We begin this representation exposure in our EYFS setting. The programmes of study are organised into distinct domains (we use the **White Rose Materials** to ensure coverage, progression and consistency of approach/ models/ images etc.), but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly

sophisticated problems. The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage.
Through careful planning and preparation, we aim to ensure that throughout the school, children are given opportunities for:

- Practical activities with concrete resources and mathematical games.
- Problem solving across the curriculum.
- Individual, group and whole class discussions and activities.
- Open and closed tasks, providing opportunity to investigate mathematical concepts.
- Exploring a range of methods of calculating promoting a breadth of learning.
- Working with computers as a mathematical tool, to support conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure.

CROSS-CURRICULAR LINKS

Throughout the whole curriculum opportunities are planned to teach, extend and promote mathematics. Teachers seek to take advantage of all opportunities through cross- curricular mathematical challenges. Teachers ensure that pupils are taught programmes of study in geometry, statistics and measure within a broader, cross-curricular approach.

Assessment

Summative Assessment
Using White Rose Maths Hub termly assessments and half termly teacher assessments, pupils are assessed against their year group objectives every half term. *Baseline tests have also been used since COVID 19, to assess gaps in learning and plan for opportunities to close these gaps.* National Curriculum tests are used at the end of KS1 and 2; teachers use past and sample papers to inform their assessments as they prepare pupils for these assessments.

Formative Assessment
White Rose Maths Hub planning and NCETM Mastery Materials help triangulate teacher judgements alongside work in books at the end of each half term. Same day intervention (post- teach intervention) is used through the use of afternoon sessions so that no child is left behind and that they are able to access the learning of the following day.

EYFS

We follow EYFS curriculum guidance for Mathematics. Through this guidance, we are committed to ensuring the confident development of number sense and put emphasis on the mastery of key early concepts. Pupils explore, experiment with and investigate numbers and become aware of key models and images (tens frame, Numicon, part-part whole etc). Teachers use the concrete- pictorial- abstract approach to conceptual development.

SEND

The aim is to ensure that all pupils make progress and gain positivity from each lesson. All teachers aim to:

- Plan lessons so that all pupils can be included.
- Use a range of concrete resources effectively to allow access to whole class or group work.
- Organise the class and deploy staff to support group or individual needs.

For children with a special need in mathematics, their target will be included on their group or Individual Provision Map (IPM), where appropriate.

Equal opportunities

It will be ensured that all pupils will have equal access to the full mathematics curriculum. See the school's Equal opportunities Policy.

Governor Support

The school's Maths governor is Sarah Brough. Monitoring visits will take place on a termly basis and will be reported back to the Governor's Curriculum Committee, where necessary.